ALTERNATIVE ENGINEERING CORP.

P. O. BOX 128 · GARDINER, MAINE 04345
(207) 623-8506

The Viper Z-GRASS unit plugs into all of the following systems:

THE BALLY HOME LIBRARY COMPUTER

THE BALLY PROFESSIONAL ARCADE

THE BALLY COMPUTER SYSTEM

ASTROCADE PROFESSIONAL ARCADE COMPUTER

ASTROVISION PROFESSIONAL ARCADE COMPUTER

Z-GRASS THE LANGUAGE.

The Z-GRASS software includes these advanced functions:

1. A FULL SCREEN TEXT EDITOR FOR FAST EFFICIENT PROGRAM EDITING.

2. STRING MANIPULATION INCLUDING MATCH,CONCATENATION,REPLACEMENT.

3. PROGRAM EXECUTION IN BOTH INTERPRETED AND COMPILED MODES.

4. MULTI-DIMENSIONAL ARRAYS AND STRING ARRAYS.

5. USER CUSTOMIZATION OF LANGUAGE AT SEVERAL LEVELS.

6. ADVANCED GRAPHICS COMMANDS:

SHRINK,TEXT,ELLIPSE,SNAP,SHOW,ROTATE,SCALE,PATTERN,STRIPE,POINT.

7. 6 USER DEFINABLE KEYS FOR SPECIAL OR REPITITIOUS FUNCTIONS.

8. OVER THIRTY SPECIAL CONTROL KEY COMMANDS WITH MULTIPLE MODES.

This is only a partial list of all the commands that are included
in the 32K of Z-GRASS software.It takes over 100 pages of the
Z-GRASS manual to describe all the commands and how to use
them.Also included in the Z-GRASS manual are 10 lessons in
programming with Z-GRASS, plus information on all the swap modules
that can be bought on disk or cassette tape.These swap modules
allow the user to get new Z-grass commands as they become
available.

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DUAL RS232 COMMUNICATIONS PORTS.

The RS232-C dual channel communications ports allow your Viper to
communicate with the outside world.These ports can be used with a
wide variety of the latest in communications equipment and both
channels have independent programmable baud rates.(300 to 38.4k
baud)The following devices can be used with these ports.

1. PRINTERS, DOT MATRIX OR LETTER QUALITY.

2. BIT PAD GRAPHICS DIGITIZERS.

3. VOICE SYNTHESIZERS.

4. TELEPHONE MODEMS.

5. REMOTE APPLIANCE CONTROLLERS.

6. COMPUTER TERMINALS.

7. OTHER Z-GRASS COMPUTER SYSTEMS.

8. REMOTE KEYBOARDS.

MICROPROCESSOR CONTROLLED KEYBOARD

The Microprocessor controlled keyboard is a state of the art high
speed data entry device.This unique keyboard features an 8
character buffer,repeat key,and microprocessor based multiple key
rollover functions with phantom key lockout.All keys are debounced
to prevent unwanted entries.The keyboard has 4 level coding,
Shift,Unshift,Capslock,and Control.There are 81 keys in the
standard QWERTY arrangement and the life expectancy per key is a
100 million cycles.The switch contacts are front sealed and
therefore humidity,dust,and vibration have no effect on proper
operation.The top row of keys have been customized for the Z-grass
computer system wielding us F1 thru F6 for the special function
keys,and four arrow keys for the Z-grass editor.Also included in
the system is a piezo tweeter that clicks each time a key has been
depressed to give the user a positive entry response.

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ARITHMETIC PROCESSING UNIT.

The 8231 Arithmetic Processor is an integral Part of the high speed graphics capabilities and is offered as an option costing several hundreds of dollars on other computers systems.This chip alone increases the speed of the mathematical computations by up to several hundred times and is therefore essential in producing the real time responses needed for complex graphics simulations.

FUNCTIONS:

1. FIXED POINT SINGLE AND DOUBLE PRECISION. (16/32 bit)

2. FLOATING POINT SINGLE PRECISION. (32 BIT)

3. FULL BINARY DATA FORMATS.

4. ADDITION,SUBTRACTION,MULTIPLICATION AND DIVISION.

5. TRIGONOMETRIC AND INVERSE TRIGONOMETRIC FUNCTIONS.

6. SQUARE ROOTS, LOGARITHMS,EXPONENTIATION.

7. FLOAT TO FIXED AND FIXED TO FLOAT CONVERSIONS.

8. STACK ORIENTED OPERAND STORAGE.

Fortunately all of the above mathematical formulas are executed transparently to the user and are completely controlled by the Z-grass software.This device has been manufactured using the most advanced N-Channel Silicon Gate Technology and therefore is extremely fast and reliable.

2000 BAUD DUAL CASSETTE INTERFACE WITH MOTOR CONTROLS.

The Dual 2000-Baud Cassette Interface is used to store and retrieve programs from a cassette recorder.The system includes 2 separate cassette ports with individual motor controls.Having 2 separate systems allows more complex functions to be easily executed.With the computer controlling the motors,one cassette could be audio instructions while the other is loading program material into the computer.The dual motor controls can also be used to let the computer start and stop the cassettes to merge files or select audio or program data.

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5.25 4 CHANNEL FLOPPY DISK CONTROLLER.

The WD1770\ 5.25 Floppy Disk Controller/Formatter from Western
Digital is the latest in floppy disk technology.This controller
contains a digital data separator and write precompensation
circuitry to insure optimum data integrity to and from.the disk.
This 5.25 floppy disk controller is capable of driving up to 4
disk drives in either single or double density.The total ammount
of memory capable of being accessed in double density mode with
the IBM MFM format would be approximately 3/4 of a million bytes.
The Z-grass software is programmed for double density formatting
in order to get the most memory storage per disk.Although this
floppy disk controller is a custom version for 5.25 disk drives
it maintains complete compatability with its predecessors and
therefore can be connected to most any 5.25 disk drive.

POWER SUPPLY FEATURES.

The system power sections include 1 switched 120v 3 prong grounded
outlet on the back panel to be used for the Bally/Astrocade wall
transformer.This outlet will turn your Bally/Astrocade unit on and
off with the Viper Zgrass unit.The front panel on/off switch is
illuminated for your convenience and is a good quick reference to
insure whether the system is on or off.
Because low voltage and power spikes can cause a computer to
intermittently fail the Viper has a specially designed
microprocessor power transformer that is capable of operating at
100% efficiency even when the power lines drop well below 110
volts.To help protect the system from power spikes the Viper also
includes a high efficiency RFI/EMI AC line filter with fuse
compartment.and the addition of a M.O.V.(metal oxide varistor) for
Hi-Voltage spike protection.

AUDIO MIXING AND STEREO OUTPUTS.

With the Viper Z-grass system you can use either your TV or your
stereo sound system to listen to the sound effects of the music
synthesizer.You can also play your cassette recorder thru the TV
or stereo system thanks to a special circuit in the Viper.With
this unique flexibility you have complete voice and music
capability for Computer Aided Instruction,Adventure games,and many

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other applications where high quality sound and programs can
interact.

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